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Flipping an Agricultural Teaching Methods Course at a Non-Land Grant University

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The purpose of this study was to analyze undergraduate students' perceptions of experiencing a flipped classroom in a teaching methods course at a Non-Land Grant Public Institution. The flipped classroom moves lectures and online videos outside of the classroom and uses class time for learning activities that promote problem-solving and discussion. Basic qualitative methods were used to provide flexibility, rich description, and the emergence of common patterns and themes. Participants reported the online lectures were beneficial and provided order and structure to the learning process. Personal responsibility emerged as a subtheme with mixed responses. Some participants felt it was the responsibility of the students to watch the videos and make sure they understood, while others felt it was too much responsibility on the students. All participants acknowledged that online lectures were a valuable tool for delivering content knowledge. All participants reported the online lectures, combined with the learning activities during class meetings, deepened their knowledge of teaching and learning application and skill development. Overall, participants felt the flipped classroom approach was a confidence booster due to the use of class time to practice their teaching skills. Participants recognized the flipped classroom as an effective teaching approach.

Keywords: flipped classroom, agricultural education, teaching methods

Introduction

The flipped classroom technique is an approach that allows students to experience new concepts outside of class time (Brame, 2013; Gilboy, Heinerichs, & Pazzaglia, 2015). Exposure to new

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material is typically accomplished through online videos used as lectures or through readings (Brame, 2013) done outside of class. Online videos/lectures and readings are often examples of lower-level learning and require students to operate at the remembering and understanding levels of the revised Bloom's Taxonomy (Anderson & Krathwohl, 2001). Class time is then used to provide learners with the opportunity to solve problems and participate in discussions (Brame, 2013). According to Brame (2013), in-class learning activities should be designed to incorporate higher levels of learning from Bloom's revised Taxonomy and should include the following levels: applying, analyzing, evaluating, and creating (Anderson & Krathwohl, 2001).

According to Sams and Bergman (2013), "flipped learning is not about learning how to use videos in your lessons. It is about how to best use your time with students" (p. 16). Sams and Bergman (2013) suggested the creative use of a flipped classroom provides additional one-on-one time between teacher and student. Not only do Sams and Bergman propose using flipping to move traditional lectures to homework time, but they also encourage the use of short videos to preview upcoming material and pose questions for students. Interestingly, Sams and Bergman's study helps to identify the need for the flipped classroom. Instructional videos were found to be valuable in shifting the lower levels of Bloom's revised taxonomy out of the classroom, which enabled the teachers to spend more class time with students on higher-order tasks that include analyzing, evaluating, and creating (Sams & Bergman, 2013).

Brame (2013) found the flipped classroom method works well for providing exposure to new material outside of class, thereby allowing for more class time for assimilating knowledge through problem-solving, discussion, and debates. Brame (2013) also noted the concept of the flipped classroom has been used for years under other names. Walvoord and Anderson promoted this concept in 1998 as *first exposure learning*, and Lage, Platt, and Treglia (2000, p. 32) used the term "inverted classroom" when reporting about its use in an introductory economics course.

In addition to a lengthy history of use, Perkins et al. (2006) published evidence that the flipped classroom can produce significant learning gains. Perkins et al. (2006) compared two sections of a large-enrollment physics course. Both sections operated the same for eleven weeks, and then one section was flipped in the 12th week. For the remainder of the semester in the flipped classroom, class discussion used targeted instructor feedback and refrained from formal lectures. At the end of the semester, four trained observers reported student engagement increased in the experimental (flipped) section from 45+/-5% to 85+/-5% (Perkins et al., 2006). During this time, both sections completed a multiple-choice test, with average scores of 41+/-1% in the control section and 74+/-1% in the flipped section, dramatically supporting the use of a flipped classroom (Perkins et al., 2006).

Two studies involving Agricultural Education teaching methods courses using the flipped classroom approach were completed in 2011 and 2012 at the University of Florida (Conner et al.,

2014a; Conner, Stripling, Blythe, Roberts, & Stedman, 2014b). In the original study, three key themes emerged from the study: (1) quality and effectiveness of online videos, (2) in-class lecture time, and (3) overall learning with a flipped classroom approach (Conner et al., 2014b). The quality and effectiveness of the online videos' category indicated the online video modules did not enhance student learning (Conner et al., 2014b). The participants indicated the content could have been transmitted through handouts instead of narrated PowerPoint presentations (Conner et al., 2014b). Participants felt the online quizzes were not needed since the participants had access to the narrated PowerPoint presentations while taking the quizzes (Conner et al., 2014b). Conner et al. (2014b) found class time to be appreciated because the time was used to expose students to various teaching methods that could be implemented in their future classrooms. However, many participants felt there should have been more class time allocated for lesson plan development (Conner et al., 2014b). Conner et al. (2014b) found that participants in the course felt the flipped classroom approach positively impacted their learning and skill development.

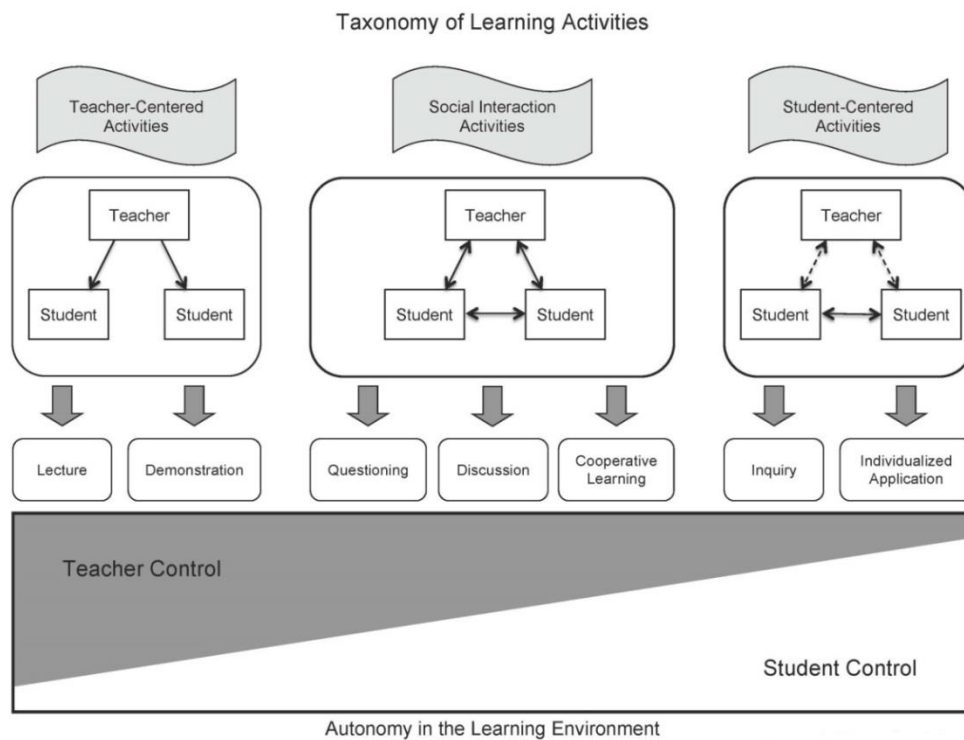
The second study (Conner et al., 2014a) identified five key themes: (1) positive aspects of online lecture, (2) technological issues, (3) positive aspects of classroom learning activities, (4) negative aspects of classroom learning activities, and (5) student beliefs regarding the flipped classroom approach. Students felt the online lectures were helpful and allowed for flexibility regarding when and where the online lectures were viewed (Conner et al., 2014a). However, participants were not pleased with the poor quality of the online video examples that were required as part of the out-of-class learning activities (Conner et al., 2014a). Some of the participants appreciated the opportunity to practice different teaching methods and to apply the online content to in-class learning activities (Conner et al., 2014a). However, not all participants appreciated the in-class learning environment due to the noise levels associated with student discussion (Conner et al., 2014a). Despite mixed perceptions of the flipped classroom approach, participants felt the flipped classroom approach was an effective way to engage students in learning (Conner et al., 2014a, 2014b).

Conceptual Framework

In 2010, researchers at the University of Florida developed The Taxonomy of College Learning Activities Model (Roberts, Stripling, & Estep, 2010). The model, seen in Figure 1, allows teachers to conceptualize the relationships between learning activities as divided into three categories: (a) teacher-centered activities, (b) social interaction activities, and (c) student-centered activities (Roberts et al., 2010). Upon further study of the model, it can be noted that as one moves from teacher-centered to student-centered, the teacher becomes a facilitator of learning. Student-centered learning activities benefit the learner by providing inquiry-based learning and individual application, which requires the learners to take responsibility for their own learning (Roberts et al., 2010). This model can be used to aid college instructors in determining appropriate activities based on learning objectives. This model was used as a

conceptual framework for this study because it shows how the flipped classroom approach removes teacher-centered methods from the classroom. The removal of teacher-centered activities from the classroom is done by using online modules to transmit information. Class time can then be used for learning activities that focus on social interactions and student-centered activities. The Taxonomy of College Learning Activities Model (Roberts et al., 2010) guided the design of the flipped classroom approach that was used for this study and helped the instructor design learning activities that used inquiry and individualized application.

Figure 1. Illustration of the Taxonomy of Learning Activities Model (Roberts et al., 2010)



Purpose

This study is similar to previous studies conducted by Conner et al. (2014a) and Conner et al. (2014b) that examined student perspectives of experiencing a flipped classroom in an Agricultural Education teaching methods course. However, the previous two studies (Conner et al., 2014a, 2014b) were conducted at a Land Grant institution, while this study was conducted with participants at a Non-Land Grant Public Institution. According to Lane and Casey (1989), college students at non-land grant/regional schools are often not required to meet as stringent entrance requirements as students at land grant institutions. Therefore, “regional schools must deal with a student body possessing a greater ranger [sic] of academic skills. Thus, the job of teaching becomes even more challenging” (Lane & Casey, 1989, p. 15). Differences in college entrance requirements and the greater variance in academic skills make the participants in this study different than participants in the previous two studies conducted by Conner et al. (2014a,

2014b). This present study is important for agricultural educators at Non-Land Grant Public Institutions because it helps agricultural educators to determine whether or not the flipped classroom approach is appropriate for their institutional environment and culture. Therefore, the purpose of this study was to analyze undergraduate students' perceptions of experiencing a flipped classroom in a teaching methods course at a Non-Land Grant Public Institution. More specifically, the research question that guided this study was: How do preservice agriculture teachers in a teaching methods course at a Non-Land Grant Public Institution perceive the flipped classroom approach?

Qualitative Perspective

Theoretical Perspective

Crotty (2013) defined theoretical perspective as “a statement of the assumptions brought to the research task and reflected in the methodology as we understand and employ it” (p. 7). This concept leaves the theoretical perspective up to the author(s) as they relate to their subjects. For this study, the perspective of constructivism was utilized. According to Crotty (2013), constructivism “suggests that each one’s way of making sense of the world is as valid and worthy of respect as any other, thereby tending to scotch any hint of a critical spirit” (p. 58).

Researcher Subjectivity

In his book, *Interviews: An Introduction to Qualitative Research Interviewing*, Steinar Kvale (1996) explained researcher subjectivity from two perspectives: (a) *biased subjectivity* and (b) *perspectival subjectivity*. Biased subjectivity researchers report only evidence that supports their own opinions and selectively interpret and report statements justifying their own conclusions (Kvale, 1996). Perspectival subjectivity appears when researchers attempt to pose different questions and seek a variety of perspectives providing multiple perspectival interpretations, reducing researcher biases, and adding validity to the study (Kvale, 1996).

The researchers involved in this study included three agricultural education faculty, one tourism faculty (all with backgrounds in qualitative research methodology), and one animal science faculty member. Due to the faculty with backgrounds in qualitative research, every effort was made in creating a study with perspectival subjectivity when collecting and reviewing the data. Additionally, two of the agricultural education faculty members (researchers) have experience with the flipped classroom approach. Both researchers have previously implemented a flipped classroom approach in an agricultural education teaching methods course and have experience using narrated PowerPoints for the out-of-class component, as well as using class time for the application of content introduced in the online component of the course. Experience with the flipped classroom approach could be a bias of the researchers. Researchers with no experience using the flipped classroom approach helped to reduce bias of the agricultural education faculty by bringing a fresh perspective to the data collection and data analysis processes.

Methods and Procedures

Description of Participants

Participants consisted of undergraduate agricultural education preservice teachers at Tennessee Technological University. Due to the size of the agricultural education program at Tennessee Technological University there were only four students enrolled in the teaching methods course during the fall 2013 semester. All four students voluntarily participated in the study. The participants were comprised of three females and one male. To protect the anonymity of the participants, each student was assigned a number by a third-party transcriptionist and was referred to using a coded numbering system. Two of the female participants were seniors in their last year of the program and were preparing to student teach the following semester. The other two participants, one female and one male, were juniors planning on student teaching the following year. The two juniors were enrolled in the teaching methods course because Tennessee Technological University was in the process of transitioning to a year-long student teaching/residency model, and fall 2013 was the last time the teaching methods course was going to be offered prior to the 2014/2015 school year, when the two students planned to complete the year-long student teaching/residency. The two seniors in the teaching methods course completed their student teaching experience during the spring of 2014, which was the last semester Tennessee Technological University allowed semester-long student teaching.

Description of the Course

The course utilized in this study was titled, "Agricultural Education Methods of Teaching Agricultural and Extension Education." The course was a three-credit-hour course that met twice a week. At the time of the investigation, this was the first flipped classroom format the students had experienced. It was also the first time the flipped classroom method had been used for this particular course at Tennessee Technological University. The course used nine online lectures throughout the semester. The online lectures consisted of narrated PowerPoints that ranged from five minutes to twelve minutes in length and were hosted and viewed on YouTube. Data on how long each participant spent viewing the online lecture was not recorded. The use of online lectures followed Brame's (2013) recommendation of using online materials (i.e., videos), and the online lectures provided content characterized by lower-level learning (Gilboy et al., 2015). Two of the researchers reviewed the online lectures and the course syllabus to validate that the online lectures were being used to introduce new material presented at the knowledge and comprehension levels. Each online lecture was accompanied by a short quiz given face-to-face during class time. The quiz was written at the remembering and understanding levels to correspond with the online lecture. The first quiz had the lowest grade; however, once the participants realized the online lectures were critical to the course, quiz grades improved and were typically between 80% and 100%. Class time was used for the students to experience the different types of teaching methods/approaches, view example teaching videos, participate in

discussion and cooperative learning activities, prepare lesson plans, and conduct microteachings. The learning activities used during class time provided an opportunity for students to operate within the higher levels of Bloom's revised taxonomy: applying, analyzing, evaluating, and creating (Anderson & Krathwohl, 2001). Additionally, the learning activities provided the opportunity to shift from teacher-centered to social interaction and student-centered learning activities (Roberts et al., 2010).

Design of the Study, Data Collection, and Analysis

To gain meaningful insights into the research phenomenon, the qualitative paradigm was used. The qualitative paradigm allowed researchers to examine the topic from the perspective and viewpoints of active participants (Denzin & Lincoln, 1994). A qualitative approach allowed the researchers to gain a more holistic and detailed understanding based on the perceptions of the participants (Creswell, 1998). In agreement with Merriam (1988), the basic qualitative method was used to provide flexibility, rich description, and the emergence of common patterns and themes. According to Merriam (2009), the basic qualitative methodology is based on the idea of constructionism and aligns with this study's epistemological perspective. In qualitative research within the education field, the basic method is commonly used (Merriam, 1988) because the basic method allows researchers to examine the participants' experience (Merriam, 2009).

Semi-structured interview formats, along with written, open-ended questions, were used as the data collection methods. Tennessee Technological University's IRB office approved this research. Semi-structured interviews allowed for in-depth, one-on-one discussion of the research phenomena. Interviews varied in length, lasting approximately 30 to 60 minutes. To help prevent participants from being dishonest and feeling that their responses would be reflected in their grades, the interviews were conducted after the course was completed and final grades had been submitted. Two additional researchers not affiliated with the course conducted the interviews. The interviewer digitally recorded each interview and took written notes during the interview process. All notes made by the interviewers were left in their original form and were used for analysis.

The interview protocol was modified from the protocol used by Conner et al. (2014a, 2014b). The following seven questions were used during the interviews: (1) What did you think of the online lectures? (2) How did the online lectures affect your ability to learn the concepts? (3) How do you think the online lectures impacted your learning? (4) How did the class activities (demonstrations, videos, group activities, etc.) affect your learning of the teaching methods? (5) How was your ability to apply concepts affected through the use of the flipped classroom approach? (6) What type of learning activities would have been helpful during class time? and (7) What advice would you give another professor who was thinking about making a similar change to one of their courses? Each question was examined to ensure alignment with teacher-centered, social interaction, or student-centered approaches that are identified on the Taxonomy

of College Learning Activities (Roberts et al., 2010). However, the researchers deviated from the interview protocol to probe deeper into the phenomena and to encourage the participants to more fully express their opinions. In addition to the interview, participants were asked to briefly write their responses to seven open-ended questions.

Participants' responses to the open-ended questions provided researchers the opportunity to gain in-depth insight into the research phenomena and a holistic view of the topic. Data from the interviews were transcribed by a third-party transcriptionist and analyzed using thematic analysis. Thematic analysis allows qualitative data to be separated into themes that reveal "a pattern found in the information that at the minimum describes and organizes possible observations or at the maximum interprets aspects of the phenomenon" (Boyatzis, 1998, p. vii). The data were reviewed three times and separated into themes. Data were color-coded based on recurring themes, and titles of themes were allowed to emerge from data.

Rigor is a critical component of qualitative research and helps the reader determine the trustworthiness of the research (Merriam, 1995). According to Merriam (1995), research studies with small sample sizes that lack random sampling can provide valuable knowledge. Merriam stated, "quite a bit can be learned from an N of 1" (p. 59). However, strategies need to be taken to ensure trustworthiness (Merriam, 1995).

To address trustworthiness, the following procedures, as outlined by Dooley (2007), and Lincoln and Guba (1985) were used: (a) triangulation, (b) establishment of credibility, (c) member checks, (d) transferability, (d) dependability audit, and (e) confirmability audit. Triangulation was addressed through the comparison of the interview data, the open-ended questions, and the notes from the interview sessions as well as through the use of multiple researchers (Lincoln & Guba, 1985). The researchers coded the data independently and then compared their data in order to come to a consensus. The interviewers continuously used member checking during the interviews to ensure the accurate interpretation of the participant's thoughts and opinions (Dooley, 2007). Participants were verbally asked to verify the correct/accurate meaning or interpretation of their statements. Effort was taken to provide rich description of the data for others to determine if the findings are transferable to other courses and participants' (Erlandson, Harris, Skipper, & Allen, 1993; Lincoln & Guba, 1985; Merriam, 1988). Thick description was provided through course and participant descriptions, direct quotes, and paraphrased data. Additionally, researchers recorded methodological decisions that were made through the analysis process in a methodological journal in order to show evidence of the dependability and confirmability audit that was performed.

Findings

Three major themes emerged from the data, and one of the themes was broken into four subthemes. The major themes included: (a) benefits and drawbacks of online lectures, (b)

knowledge and skill development, and (c) overall perceptions of the flipped classroom. Evidence of each theme has been provided in the following paragraphs.

Benefits and Drawbacks of Online Lectures

Flexibility. The flexibility of the online lectures was a benefit for most of the participants (S1; S3; S4). The ability to pause the online lecture whenever needed to take detailed notes without asking a professor to slow down and repeat what was previously stated was appreciated (S3). Participant S1 felt the ability to re-watch the online lecture positively contributed to the learning experience. Participant S3 stated,

I took notes while I was watching the videos and I would pause them [online lectures] and write things down, and um, if I were to just listen to them [online lectures] and not have notes and just watch it only, I don't think I would have learned as much.

Participant S4 stated, "it was easier for us to be able to go look at it [the online lectures] and then come back to class and talk about it." Similarly, participant S3 felt the flexibility of how to use the online lectures enhanced the learning process. Participant S3 would often pause the online lectures and reflect over the content and attempt to answer the questions posed by the professor. After reflecting on the content, participant S3 would continue watching the online module. Additionally, participant S3 benefited from being able to view the online lectures when it was most convenient. Participant S3 stated,

I could do it [watch the online lectures] whenever it was best for me, and sometimes that was one o'clock in the morning, you know, if that's what worked for me, that's what worked for me, and I didn't have to worry about if it was conducive to anybody else's schedule.

The ability to choose when to view the online lectures led participant S3 to experience independence of learning. Participant S3 stated, "I was able to utilize them [online lectures], and that was good for me just because it was so independent that I liked it, and I felt like it enabled me to maximize the way I learn best."

Structured learning. The online lectures allowed for a learning environment that provided order and structure to the learning process (S1; S3; S4). Participant S4 felt the online lectures provided content from a broad perspective, and eventually narrowed down that content to focus on specific knowledge applied to the main concepts being taught. The short time length of the online lectures and the specificity of the topics helped participant S1 focus on the content. Participant S1 stated, "Anything that we needed to learn, we could go on there [online lectures], and within the short amount of time, you could learn it real quick, and you know exactly what you are supposed to be doing." Similarly, participant S3 stated, "I liked how brief they [online

lectures] were, and they were very concise. . . . I didn't feel like there was a lot of fluff . . . it was just the meat of the information and nothing else."

Personal responsibility. Personal responsibility was a subtheme that emerged from the data and is considered both a benefit and drawback of online lectures. Depending on the participant, the personal responsibility aspect of the online lectures was received differently. Participant S3 stated,

It's really the responsibility of the student to watch the videos and to make sure that they understand and gain the content and gain the knowledge. . . . I feel like the [personal responsibility] impacted my learning because I realized that I could just watch this, or I could actually take notes, pause it [the video], and that impacted my learning, and I knew that was on me, and so that responsibility made me take it more seriously because I knew that it was literally up to me to learn.

Participant S1 echoed the opinion of participant S3 and felt that watching the online lectures was the students' choice, but the quizzes on the online lectures were the motivation for participant S1 to take the online lectures seriously. On the other hand, participant S2 did not like the online lectures due to the personal responsibility that was associated with watching the lectures on your own time and preparing for the next class session. Participant S2 stated, "I felt like it [online lectures] was too much responsibility on the students."

Content delivery in a focused environment. Participants (S1; S2; S3; S4) acknowledged that the online lectures were a valuable tool for delivering content knowledge. Participant S2 stated,

In the videos for the flipped classroom, it went into detail about what modalities are used and what should be involved in each like teaching method, and so that helped when we were doing our teaching methods because the video taught us things we needed to do, and I guess that helped.

Using online lectures as a tool for content delivery helped participant S4 focus on the content in a quiet environment and allowed for learning to take place in a distraction-free zone.

Knowledge and Skill Development

In addition to the online lectures, learning activities facilitated during class time helped the participants deepen their knowledge of teaching and learning application, and skill development (S1; S2; S3; S4). Participant S3 felt that the in-class learning activities helped to reinforce the knowledge gained from the online lectures and allowed for the opportunity to apply the knowledge through microteachings and lesson plan development. Participant S2 stated, "The demonstrations [microteachings] that we had to do Thursday obviously helped us." The opportunity to use class time to watch recordings of people teaching and the opportunity to

critique the teaching clip allowed participant S2 to apply the knowledge gained from the online lectures. Participant S2 stated,

What really helped was watching videos of other students using that method [teaching method], or when he [instructor] used that method on Tuesday so we had an idea of what kind of lessons we can do and what kind of material we could use.

Class time allowed for the opportunity to practice what the students had previously learned (S4). Participant S4 stated, “We were able to get that experience, like even though it was just for a little bit, we weren’t just learning about it [teaching methods] and doing it, we were applying it as we went.” Learning activities that required the application of knowledge and the development of skill allowed participant S3 to practice the teaching methods that were included in the online lectures.

Overall Perceptions and Attitudes toward the Flipped Classroom

Initially, two of the participants (S2; S4) were apprehensive about experiencing a course that utilized the flipped classroom method. One participant (S3) was, “initially resistant to the idea [of the flipped classroom] because I thought it would require more work on my part.” The participants began the course with little knowledge of the concept of a flipped classroom (S1; S2; S3; S4). However, attitudes towards the flipped classroom changed as the course progressed. Participant S3 stated, “I also feel that it [flipped classroom] is much more educational because of the experiential learning aspect. These realizations all came about because I was part of a flipped classroom.” Similarly, participant S4’s apprehension began to fade when the flipped classroom was viewed as a viable teaching technique.

Participant S3 felt the flipped classroom approach contributed to overall learning and stated, “I feel that this approach taught me more about how to teach and what it is like to plan, prepare, and present daily lessons.” Similarly, participant S4 felt cooperative learning groups and microteachings increased the learning that took place in the course. Additionally, a majority of the participants (S1; S3; S4) felt the use of the flipped classroom approach increased their confidence as a preservice teacher. Participant S4 stated, “I would say that through the flipped classroom, I was able to better grasp concepts and learning strategies taught in class and was challenged to apply them in real-life situations.”

Conclusions, Implications, and Recommendations

When drawing conclusions, identifying implications, and making recommendations from this study, the reader should be aware of the limitations of this study. The small sample size could affect the transferability of the findings to other situations. Additionally, the students were purposefully selected based on their enrollment in the course and may not fully represent

preservice agricultural education students at a Non-Land Grant Institution. Readers should decide whether or not the findings are transferable to their particular course and students.

Similar to Conner et al. (2014a, 2014b), participants had differing perceptions of the flipped classroom approach. Some of the participants valued the flexibility of learning about and exploring content prior to class. The flexibility of learning on their own seemed to instill a sense of personal responsibility, which empowered some of the participants to take responsibility for their own learning. The positive aspect of flexible learning was similar to results found in previous studies (Conner et al., 2014a, 2014b; Shimamoto, 2012; Strayer, 2007). However, not all participants appreciated the increased level of personal responsibility required to prepare outside of class. It seems some students preferred for all of the learning activities to take place during class time.

In contrast to Conner et al. (2014a), the participants did not focus on the quality, or lack of quality, of the online lectures or the negative impact the flipped classroom had on learning. Instead, most of the participants felt the online lectures served as an introduction to the material or a foundation of knowledge, which was similar to previous research (Sams & Bergman, 2013). The combination of out-of-class learning activities and in-class learning activities allowed for the participants to learn from both the student-centered and teacher-centered approaches (Roberts et al., 2010). In accordance with Brame (2013), participants perceived the benefit of using class time for higher-order thinking learning opportunities. The connections between concepts introduced and taught through online lectures, and the class learning activities, that were designed to allow for discussion and practice of the various teaching methods, were perceived as a positive framework for enhancing knowledge and skill development and aligned with the social-interaction activities and the student-centered activities sections of the Taxonomy of College Learning Activities Model (Roberts et al., 2010). Unlike results from Conner et al. (2014a), participants from this study did not view in-class learning activities as a waste of time. Instead, most of the participants felt the combination of out of class and in-class learning activities attributed to both knowledge and skill development as a preservice teacher.

Additionally, replacing lecture with teaching videos, discussion, cooperative learning activities, and microteachings seemed to boost the confidence level of many of the participants. It would appear that the use of more complex higher order thinking learning activities in the classroom helps to increase the learner's self-efficacy toward teaching. An increased self-efficacy towards teaching obtained from a course using the flipped classroom approach aligned with the participants' overall perception that the flipped classroom enhanced their learning experience and allowed for both knowledge and skill development that will help them be successful in their future teaching career. The participants' overall belief that the flipped classroom is a viable teaching approach for preservice teachers is consistent with previous studies (Conner et al. 2014a, 2014b; Lage et al., 2000; Shimamoto, 2012; Strayer, 2007). Additionally, Conner et al. (2014a) recommended using the flipped classroom approach in other settings. This study

adhered to the recommendation by implementing the flipped classroom approach at a Non-Land Grant Public Institution and found the majority of the participants felt the approach aided their development of knowledge and skills.

Findings from this study suggest that the flipped classroom approach could continue to be used as a framework for agricultural teaching methods courses and other courses striving for knowledge and skill development. However, it is important to recognize that all students will not be comfortable nor value taking a course using the flipped classroom approach. Similar results have been previously reported (Conner et al., 2014a). Instructors wishing to use the flipped classroom approach are advised to fully explain the flipped classroom approach and continuously make connections between learning that takes place outside of the classroom and learning that takes place inside the classroom. Including learning activities at the remembering and understanding levels (Anderson & Krathwohl, 2001) prior to class provides a solid foundation upon which students can build. Instructors should continually refer back to the students' prior knowledge and use the students' prior knowledge to design and implement in-class learning activities that focus on applying, analyzing, evaluating, and creating (Anderson & Krathwohl, 2001).

As indicated in the previous paragraphs, participants in this study had differing perceptions of the flipped classroom, which is similar to the findings from a Land Grant University (Conner et al., 2014a, 2014b). Overall, participants in this study positively received the flipped classroom and felt that the flipped classroom enhanced their educational experience. Unlike findings from Conner et al. (2014a), participants at a Non-Land Grant Public Institution felt the in-class learning activities were beneficial and impacted their growth and development as a teacher. Despite Lane and Casey's (1989) assertion that Non-Land Grant Public Institutions have a more academically diverse student body, the flipped classroom approach seemed to challenge the participants of this study and create an environment that required responsibility, critical thinking, and reflection. The flipped classroom should be used at Non-Land Grant Public Institutions to engage students in active learning and help students develop and grow.

Further research is needed on the cognitive gains of students enrolled in courses using the flipped classroom approach. Research should also be conducted on the impact that a flipped agricultural teaching methods course has on the participants' instructional approaches used during their student teaching experience. The best instructional design for in-class and out-of-class learning activities should also be examined. An agricultural teaching methods course provides an excellent subject area for the flipped classroom approach because the approach allows class time to be used for the development of lesson planning and other application-based learning activities; however, the flipped classroom approach should be implemented in other agricultural education courses to evaluate whether the flipped classroom approach is appropriate and effective for agricultural education courses.

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